NAME: ....   ID. #: . . . .

Q1 Compute

$$\lim_{x \to \infty} \sqrt{x^2 + 1} - x$$

Q2.. Find the values of a and b so that the following function is continuos everywhere

$$f(x) = \begin{cases} x + 1 & \text{if } x < 1 \\ ax + b & \text{if } 1 \le x < 2 \\ 3x & \text{if } x \ge 2. \end{cases}$$